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Price Determinants of Bitcoin as An Investment in the Philippine Context

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Abstract *— Bitcoin is an open-sourced, decentralized system, despite its intangible characteristic, it is the most prominent digital currency developed by an unknown programmer famously known as Nakamoto in 2008. The aim of this paper is to render evidence whether Bitcoin is a secured platform for investing despite its volatile behavior by verifying whether the Market Capitalization, Trade Volume, Exchange Rate (USD) are critical determinants of Bitcoin price. The research makes use of secondary data from coindesk.com to gather results using Multiple Linear Regression and the Ordinary Least Squares in analyzing the relationship between the variables. Market Capitalization fails to reject the null hypothesis. Trade Volume and Exchange Rate (USD) are variations that can explain 93.87% of Bitcoin price. The results gathered shows that Bitcoin prices are highly volatile because of the volatility of the Independent Variables. Bitcoin as a means of investment is not a viable option of investment for its sudden volatility of high-high risk with a high-high return or loss.*

Keywords— *Bitcoin, Price Volatility, Exchange rates, Bitcoin Investment, Mining Mechanism*

I. INTRODUCTION

1.1. Background of the Study

Bitcoin is a new form of electronic currency that has been used worldwide as a paying system. It has become one of the most prominent digital currencies since an unknown individual released it under the name of Nakamoto. (Junior et al., 2020; Busnel et al., 2021). Bitcoin is an electronic currency implemented using cryptography, wherein codes are used to protect information from unwanted readers. The mining mechanism is an integral part of Cryptocurrency because this creates new Bitcoins; this occurs when a participant exhausts his or her resources as a transaction fee to collect rewards, according to the study of Davey (2013). It raises the question of how it differs from the fiat monetary system? Fiat money is legal tender with a value bound to a government-issued currency, such as the US dollar. At the same time, cryptocurrency is a digital commodity with a value derived from its native blockchain. Central banks issue and regulate fiat money, while blockchain protocols, codes, and societies govern cryptocurrency.

The emergence of the internet and technologies helped simplify all the areas and processes. The emergence of this new digital transaction mode demands on having accessible transactions at a low cost came into existence. In this, online transactions were made possible and electronic money had been created. According to Bondarenko et al. (2019), electronic money became famous even though it just appeared relatively recently in our money transaction system. The world is starting to adapt to changes and beginning to shift from physical transactions to virtual. One famous example of virtual money is bitcoin. In the year 2008, Bitcoin became one of the most prominent digital currencies, according to Busnel et al. (2021). The said cryptocurrency is an asset that is digitalized or a virtual currency in the digital economy, also known as BTC. Bitcoin is one of the most popular and widely used, and fast-emerging digital currencies today (Bohme et al., 2015; Bonneau et al., 2015; Deepika et al., 2017). According to Aziz (2019), Bitcoin is the first successful cryptocurrency amongst other things and manifests the evolution in the physical dimension of currency in the digital and internet revolution. Bitcoin is also the most prominent cryptocurrency that has grown tremendously since the development of this electronic currency (Ekaputra et al., 2021). Bitcoin, a nascent decentralized digital currency that debuted in 2008, has risen dramatically in size since its inception, from 0.07 cents to a peak of 37,053.28, with a market capitalization of 706.20 billion dollars as of May 2021, bitcoin enters the market as a serious competitor.

According to Klabbers (2017), the rise in the market capitalization of bitcoin corresponds to an increase in media coverage and an increase in interest in economic literature.

Most are not familiar with how cryptocurrency works, specifically Bitcoin. It is a protected digitized currency, especially from counterfeits. This electronic currency that is implemented uses cryptography, wherein codes are used as a method to save pieces of information from unwanted readers and help prevent someone who keeps track of transactions to forge copies from owners (Davey et al., 2013; Alystyne, 2014). It is stored in electronic wallets, similar to where we keep our cash in the bank. This makes Bitcoin a trusted mode of transaction because the seller needs to use his or her bitcoin wallet to complete a trade to the receiver's wallet address. A cryptographic key is required to validate the transaction (Busnel et al., 2021). To point it out, according to the research made by Bondarenko et al. (2019), there is a difference between cryptocurrency and electronic money. Wherein the electronic money, it should be first deposited into the account before using it. At the same time, cryptocurrency is created and produced on the internet or, as they call it, "mine" and not associated with any usual currencies that we know of. Having to say that, it raises the question with regards to the security of cryptocurrency. The bitcoin itself is hard to understand because engineers made it without apparent influence from lawyers or regulators. According to Athey et al. (2016), Bitcoins are not backed by governments and have no fundamental value, creating confusion in the widespread discussion about how exchange rates are even determined. In the Philippines, the Bangko Sentral ng Pilipinas (BSP) has started to take steps in regulating the operations of virtual currencies exchanges in the country in their 2017 released memorandum under Circular N0. 944. Since virtual currencies have gained a lot of traction in the Philippines over the last few years. The Bangko Sentral ng Pilipinas (BSP) has recognized Virtual Currencies (VCs) as having innovative potential for financial transactions and financial inclusion.

1.2. Statement of the Problem

This research aims to render evidence that Bitcoin is a secured platform for as an investment. Therefore, this research seeks to know whether the exchange rates (USD), Market Capitalization, and Trade Volumes are the critical determinants of Bitcoin's volatilities. In this, the researchers would study the volatility behavior of the price of Bitcoin whether it hinders stakeholders from investing in the cryptocurrency. Lastly, this research aims to identify how security is a factor in the trade volume of investors.

1.3. Objectives of the Study

This research aims to know the factors that affect the bitcoin cryptocurrency as a probable investment. The study wants to understand what influences the cryptocurrency prices like exchange rates (USD), market capitalization, and the demand in terms of trade volume. The research also aims to study how the security of bitcoin has leverage in identifying the trade volume. The researchers want to know if this type of network is ideal for investing, considering the volatilities of prices. The research would also study the trend of the bitcoin prices to identify how it is correlated with one another and it effects on people's investments.

1. To know the elements that affect the price of the bitcoin cryptocurrency
2. To discover the impact of cryptocurrency prices such as exchange rates (USD), market capitalization, and demand in trade volume.
3. To determine whether Bitcoin Cryptocurrency is an ideal alternative investment despite its volatility in price.

1.4. Importance of Research

Bitcoin is a new form of electronic currency that has been used worldwide as a paying system. It has become one of the most prominent digital currencies since an unknown individual released it under the name of Nakamoto. (Junior et al., 2020; Busnel et al., 2021). Thus, making this study significant in providing more background information on this type of cryptocurrency and would be beneficial to the following:

1. Future Researchers and Educators. The findings in this study can serve as an overview and an added literature since there are not so many available findings and research made regarding the behavior of Bitcoin and its history. This study will educate learners about financial technology, virtual money, debt avoidance, and financial management.
2. Future Bitcoin users. The findings in this research will help prospective investors learn critical factors in their future investment plans, become knowledgeable, and have an informed decision to create financial security.

3. Future Stakeholders. The findings of this research may be used as a basis and a foundation in addressing the issues at hand. Through this study, stakeholders will have an informed decision regarding the factors that affect the prices of Bitcoin and which aspects of this cryptocurrency must be addressed. In addition to the benefits mentioned earlier in this study, the stakeholders will be able to reduce risks and understand the constraints of bitcoin through this study.

1.5. Scope and Limitations

This research aims to determine whether exchange rates (USD), Market Capitalization, and Trade Volume affect the Bitcoin Price hinder the perception of stakeholders and Bitcoin users in investing in Bitcoin Cryptocurrency. Also, the study aims to understand if exchange rates (USD), Market Capitalization, and Trade Volume influence the Price of Bitcoin.

The limitation of this study is that among the different quantitative variables, the researchers only focused on the market capitalization, Exchange rate (USD), and Trade volume. Another limitation that arises in this study is that the researchers did not maximize the data to gather as they could not gather qualitative factors. Another limitation of this study is the number of observations used to analyze the data of a duration from August 1st until November 1st of the year 2021.

II. LITERATURE REVIEW

Most of the scholarly research on bitcoin pays more attention to the processes of cryptocurrency processing and modern tendencies of growth of cryptocurrency markets and exchanges. There continues to be a shortage of research relevant to certain aspects of utilizing cryptocurrency in business operations, including in investments. Since the field of crypto finance has just recently begun to be used in the economic and finance literature, there are still some gaps to fill in and address. A significant portion of bitcoin research has focused on cryptography, computer science, stability, and device architecture.

2.1. Bitcoin as an Investment

Since an unknown programmer known as Satoshi Nakamoto developed Bitcoin in 2008 (Huberman et al., 2017), Bitcoin has become the top cryptocurrency market. Ethereal, XRP, Bitcoin Cash, and Bitcoin SV, Shaikh (2020). Since then, the number of users has substantially increased since anyone can transact and exchange this electronic currency for any primary currency at a low cost. Another Reason for the substantial increase of this type of electronic currency is because Bitcoin has become a Substitute currency; since any authority does not control it, there is no capital control, and there are minimal risks during transactions. (Junior et al., 2020). Throughout the years, Bitcoin comprises 41% of the digital economy or the cryptocurrency, making it the most popular and draws attention from both investors and the media (Urquhart 2017). The popularity of Bitcoin is evident in the record that shows that in the year 2017, 60.36% of the Cryptocurrency market capitalization was composed of Bitcoin, according to the study of (Paul & Sunday, 2017; Alssendretti et al. 2017). It was also recorded that in the year 2016, there were about $92 Billion in Bitcoin transactions made, Li (2017). Another record shows that 54% of the Virtual Financial Asset is the Bitcoin Cryptocurrency, making it the most popular among the rest created (Dong et al., 2018). According to the study of Ciaian et al. (2016), there was a surge in transactions in 2015 wherein it was recorded that an amount accumulating to $5 Billion US dollars was transacted that year. However, according to the study of (Kazanet al., 2015), with the growing popularity of Bitcoin Cryptocurrency, it has been recorded that in 2015, Bitcoin had an estimated circulation amount of $4 Billion US Dollars. In the Digital Economy, Bitcoin has become a trusted mode of payment. Another source indicates that the value of Bitcoin has surged along with its popularity as a digital currency. This can be supported by the fact that the value of Bitcoin reached $19,870.6 from $0.09 in seven years from the year 2010 until 2017 (Paul-Vienez et al., 2019). Throughout the years, 5,300 Bitcoins were transacted in the Financial Market (Chang et al., 2021).

Since Bitcoin has become a standard tool, it was launched in the Chicago board options exchange in 2017 (Lopez-Cabardos et al., 2021. Bitcoin Cryptocurrency has been recently perceived as an investment throughout the years since it has statistical properties of storing value (Kwon., 2020; Kyriazis., 2020). Bitcoin has safe-haven characteristics because it assures users and investors of risk-fee transactions that are free from uncertainties. This can be supported by the fact that individuals used Bitcoin during the 'European Sovereign Debt Crisis' from 2010 until 2013, Yu (2017). is considered an innovative form of payment, but it is acknowledged that Bitcoin has 'safe-haven characteristics (Kyriazis, 2020). Another source identifies Bitcoin's safe-haven characteristics with a return value higher than Gold and its storing value (Paul-Vianez et al., (2019). In the study of Wang (2014), it is cited that the value of this type of cryptocurrency is not dependent on the

transactions created with Bitcoin. However, the value of Bitcoin relies on the Bitcoin user and investors' willingness to save this type of electronic currency. While several users use this kind of electronic currency for online transactions and the exchange of goods, many Bitcoin users use this mode of Cryptocurrency as an investment rather than using it as a mode of practical transactions, thus making the characteristics of this cryptocurrency become based on the standards of Gold (Bashir et al., 2014). One of the reasons why using Bitcoin is favorable is that it is considered an asset with guaranteed security, attracting investors, policymakers, and ordinary users. Bitcoin is an asset with characteristics similar to Gold because of its volatility which makes this cryptocurrency unique and attractive to investors (Chang et al., 2021; Kyriazis., 2020).

2.2. Price Volatility and Exchange Rates

Bitcoin cryptocurrency's trade rate has rocketed through the years after its inception. Although it is not a legitimate currency, many people are still looking into this cryptocurrency as a suitable type of investment, but some are concerned about the volatility of prices. Trading Bitcoins with local and foreign currencies is an essential part of its characteristics as an electronic currency, Li (2017). While its reputation has increased globally, market fluctuations are often unpredictable. As a result, such broad and abrupt movements will dampen Bitcoin's steady growth. When Bitcoin values fluctuate or lose a significant amount of money, participants stop using it, impeding the effective distribution of capital in the market (Fukushima & Kurihara, 2018). According to Dwyer (2014), the inflationary pressures in Bitcoin are more significant than the fluctuations in Bitcoin Price Volatility, at the 10% mark, the number of addresses that reflect the scale of BTC has a solid and meaningful effect on prices (1.539 percent). This means that as the number of addresses grows, so does the price of BTC. In other words, a vast number of investors begin to accept Bitcoin as payment and are interested in purchasing it. In the research analysis of Aalborg et al. (2018), they utilized realized volatility calculated from high-frequency data and included past daily weekly and monthly volatilities, and it showed that the past volatility is always highly significant. However, for investors, their investment strategies when accumulating Bitcoins focus on its volatility and consider the stock market from social networks. This is because the volatility of Bitcoin changes through time, Lopez-Cabarcos (2021). In 2016, the price of Bitcoin recorded trading levels below $1,000, which surged tremendously at $20,000 by the end of 2017. However, it had a severe depreciation value of only $4,000 at the end of 2018 (Damianov et al., 2020; Lee et al., 2020).

On a daily scale, they found that the volatility is correlated with and Bitcoin exchange volume can forecast future prices. The volatility of this cryptocurrency is different from fiat money, Dong et al., (2018). On the other hand, the research on Dong et al. (2018) tells us that the volatility of Bitcoin cannot be depicted even when acquiring large volumes of Bitcoin. As stated in the study of (Stosic et al., 2019), Statisticians have analyzed that there is no correlation with the volume of Bitcoin in terms of its price. According to the study of Junio et al. (2020), they believe that by checking who is a significant user in cryptocurrency transactions, policymakers, investors, and foreign exchange traders can easily predict future outcomes and the volatility behavior in the Bitcoin Market. According to Tsan et al. (2020), price dispersion is when different prices of the same goods are distinct by different sellers. The researchers believe that factors that bring up price dispersion are transaction fees and price growth of Bitcoin Cryptocurrency. Eight Bitcoin exchanges have reliable data to identify the price dispersion of the sellers of the same item over time, and these Bitcoins exchanges are Bitfinex, Bitstamp, Cex.io, Coinbase, Exmo, Gemini, Kraken, and Poloniex.

Cryptocurrency has hypothetical elements, and the prices are very different compared to other stocks, assets, and other forms of investments, Kurihara, (2021). Despite exhibiting higher volatility than gold, both major cryptocurrencies, Bitcoin and Ethereum, are considered a better short-term haven than gold and other commodities like stocks (Ekaputra et al., 2021). However, the findings in the study of Conlon et al. (2020) have a different take on the correlation between Bitcoin and Gold. The researchers cited that Bitcoin is a 'safe-haven characteristic for its convenience to its users, such as being independent of monetary policy and considered a commodity similar to Gold since Bitcoin has a store of value. According to Chang et al. (2021) Bitcoin's volatile characteristics make it similar to gold.

However, future investors do not only look into the trade rate of Bitcoin, its volatility and its market fluctuations. Future and present investors also consider the exchange rate of Bitcoin as a cryptocurrency. The reason behind this is because the exchange rates, whatever currency it may be, have a direct effect on the price of Bitcoin. Bitcoin, as we have mentioned above, has functions similar to the fiat currencies wherein it has a function that can store value and a unit of exchange. To fully grasp the additional reason to the volatility of Bitcoin price, we must first look into the factors that affect exchange rate. According to Li, X., & Wang, A., (2017), monetary policies and economic conditions are determinants to the exchange rate between Bitcoin and other currencies. This can be backed by the study of Branson, W., (1983), wherein he mentioned that monetary

policy is indeed vital in ensuring the equilibrium of the exchange rate. According to Branson, W., (1983), exchange rate is driven by countries like the United States of America and Japan, while Germany and the United Kingdom react to the driving countries mentioned by adjusting their interest rates. In the study of Dornusch, R., (1980), it was found that to identify the exchange rate, one must look into the short-run equilibrium. When the price of a nation's exported goods decrease in price relative to its imports, the exchange rate deteriorates as well. Several co-integrated testings were able to identify that the relative money supplies and the relative income levels are highly correlated with the US Dollar Exchange rate in the long-run, Rapach, D., & Wohar, M., (2004). Since we have already covered the factors affecting exchange, we can relate these factors to the volatility of Bitcoin price as well. In addition to the aforementioned, one of the factors that cause the appreciation of the Bitcoin Exchange rate is due to the scarce supply of Bitcoin circulating, Li, X., & Wang, A., (2017). Another key point in the study of Li, X., & Wang, A., (2017), economic indicators such as inflation and interest rates are correlated with the Bitcoin exchange rate, thus proving that there are many variables future investors will have to consider when investing in Bitcoin.

2.3. Security: A Proxy Determinant in Identifying the Trade Volume

The cryptocurrency Bitcoin was first launched in 2008 by engineers without any lawyers or regulators' apparent influence. This posed the issue of whether the blockchain, as mentioned earlier, is as stable as traditional capital market assets and even a mode of payment for purchases. Since Bitcoin is a virtual currency, it is not regulated by the government. Cryptocurrency is not governed by an extensive regulatory body such as a banking structure or any financial organization (Park et al., 2019). Bitcoin is a decentralized digital currency or cryptocurrency that does not have any backing from the government (Li et al., 2020; Ciaian et al., 2016). Bitcoin is the most successful in terms of growth, users, and popularity. This is backed by the fact that there was a surge in transactions in 2015, accumulating to an amount of $5 Billion US dollars, Ciaian et al. (2016). The cryptocurrency is unregulated virtual money issued by the central authorities and also controlled by the developers. According to Carrick (2016), the most significant danger that consumers encounter when it comes to this well-known cryptographic currency is cybersecurity. An important issue was known in 2010 when there were problems in the verification of transactions. This led to a significant point concerning the vulnerability of the platform. According to Eyal & Sirer (2014), transactions were not correctly checked and entered into the transaction log blockchain, allowing users to circumvent the constraints to generate a limitless number of Bitcoins. Reid & Harrigan (2013) showed that there are possible security flaws in Bitcoin networks. In this, many possibilities can arise regarding security, especially that networks like cryptocurrencies are flawed. Additionally, Androulaki et al. (2012) revealed that bitcoins could be double counted by easy spending. Moore and Christin (2013) demonstrated that there are security issues in Bitcoin exchanges, and they argue that this is where the most security risks exist.

Security is an essential aspect a user or an investor should look at when joining or investing in an unregulated network such as the cryptocurrency bitcoin. With all that being said, this begs the question if bitcoin is secured for investment plans. However, other scholarly researchers pointed out the network's flaws and suggested that measures can be taken to increase the security of the transaction (Sompolinsky et al., 2015). That being said, there were several studies, according to Feld et al. (2014), that the vulnerability and security flaws of bitcoin cryptocurrency were minor. Issues like fairness, latency, and worst would be transactions made by malicious agencies have surfaced since the development of this cryptocurrency, Gao et al. (2020). With this regard, does this mean that bitcoin is secured? According to CoinDesk (n.d.) cited by Ivashchenko (2016), banks either use bitcoin or play with the technologies, according to CoinDesk. Among them are the following:

Since central European banks plan to use blockchain technology such as Bitcoin in their transactions, this only shows that Bitcoin is secure. He also mentioned that the French financial services firm AXA considers using bitcoin to minimize continuing costs in the remittance industry. According to Deepika et al. (2017), Bitcoin is being used by a rising number of companies and individuals. These include brick-and-mortar businesses such as hotels, homes, law firms, famous internet platforms and games, and many other categories of businesses. The German Finance Ministry signed a resolution recognizing Bitcoin as a payment method in February 2018. Moreover, that value-added tax would be levied on cryptocurrency transactions (Bondarenko et al., 2019).

Security is an exemplary aspect that each individual looks into when creating a bank account or merely creating an investment plan. According to Davey et al. (2013), Each bitcoin has an address to show every transaction created; with this protocol, users of this Cryptocurrency can easily verify the validity of their transactions and prevent errors in payments or transactions. One of the critical solutions would be the 'script' which assures the latency issues would be reduced to address Latency problems. The 'script' is an encryption

key of data wherein a payee must surrender to acquire his or her Bitcoin, Gao et al., (2020). Another reason why Bitcoin is thriving and is one of the trusted electronic currencies is that cryptography help prevents someone who keeps track of transactions to forge copies of coins from owners and also because unlike credit card companies and currency exchange, this cryptocurrency does not take any amount to be transacted by the buyer or the seller according to Alstyne (2014). Another validity made that makes Bitcoin a trusted mode of the transaction would be because in every transaction made, the sender uses a bitcoin wallet, a wallet address, and a cryptographic key are all needed to create a valid transaction (Busnel et al., 2021).

Despite all the extraordinary measures taken into consideration, just like fiat money or our local and foreign currency, Bitcoin is also used as a mode of transaction for illegal activities. Several illegal transactions have been made by malicious agencies or individuals, Cheah et al., (2018). This electronic currency has become a threat to authorities since it has become a tool for illegal transactions like money laundering since this electronic currency is not backed by any form of authority (Dong et al., 2018).

2.4. Mining Mechanism and Blockchain System

One of the essential parts of Bitcoin is the miners and the mining mechanism. This is an essential aspect of Bitcoin because miners create new Bitcoins. Blockchain is also crucial to Miners in their mining mechanism. Bitcoin is a cryptocurrency that makes use of a Blockchain system that makes use of Cryptography in the transactions made for validity uses (Alessandretti et al. 2017). Miners use Blockchain to create ledgers wherein they fill in around 2,000 Bitcoin transactions into a block. Afterward, the fees of the transactions in the block and new Bitcoins are rewarded as compensation to the Miners (Huberman et al., 2017; Alessandretti et al., 2017). Furthermore, Bitcoin is an electronic currency that uses Blockchain technology to make Cryptographic proof to ensure the validity of every transaction made worldwide (Paul & Sunday, 2017; Momtaz, 2019). Since Bitcoin has become a reliable platform for transactions, established companies like European Banks and Visa have created a similar system inspired by the Blockchain for trading and payment (Paul & Sunday (2017). Cryptocurrency and Central banks have been working together throughout the years since Bitcoin has been a reliable mode of transaction (Stosic et al., 2019). The mining Mechanism occurs when a participant exhausts their resources as a transaction fee to collect rewards, Bitcoins (Davey et al., 2013). One of the essential parts of Bitcoin is the miners and the mining mechanism. This is an essential aspect of Bitcoin because miners create new Bitcoins.

Mining Technology has been growing popular since Bitcoin's development, making it a more efficient tool. However, most of the Bitcoin user population does not engage in the mining scheme since they merely use this type of cryptocurrency as a mode of transaction, as cited in the study of Li (2017). Mining Mechanism occurs when a participant exhausts. One of the pioneer modes of electronic currencies is DigiCash and CyberCash. They were used because they offer instant transactions of large amounts of money while being anonymous, which is why this Cryptocurrency has committed users (Bashir et al., 2014). Since Bitcoin does not have a physical form of currency and that is not backed by any form of authority, this type of cryptocurrency is a program that uses a 'mining' process that creates ledgers that verifies and records transactions. By doing so, these 'miners' are rewarded with transaction fees and even new Bitcoins (Ciaian et al., 2016; Kazan et al., 2015). Two of the most prominent Trading websites with an extensive search volume are 'www.coindesk.com' and 'BTC.com,' which are professional trading websites with an extensive search volume per day Bitcoins (Li et al., 2020).

2.5. SIMULACRUM

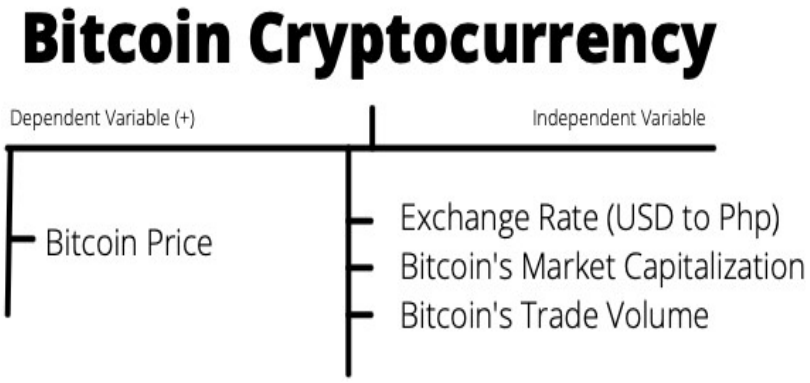

Fig 1. Research Simulacrum representing the Bitcoin Price as the Dependent variable, and Exchange rate, Market Capitalization, and Bitcoin's Trade Volume as the independent variables

2.6. Hypothesis

H01: Exchange rates have no impact on the Price of Bitcoin

H02: Bitcoin's Market Capitalization has no impact on the Price of Bitcoin

H03: Bitcoin's Trade Volume has no impact on the Price of Bitcoin

III. METHOD (SIZE 10 & BOLD)

3.1. Research Design

A correlation design was used to describe the relationship of the variables systematically. Using this design, the researchers can verify the existing relationships the variables have with one another based on the statistical association of the independent and dependent variables. To satisfy the hypotheses and validate the study, the researchers used a quantitative method of research. The critical feature of quantitative analysis is that it will use data to observe or quantify the hypothesis.

3.2. Data and Sources of Specification

Data collection focusing on the price of Bitcoin, exchange rate of USD to PHP will be used to interpret the relationship between the two variables. The data used in this study were gathered from coindesk.com from their daily data starting from 2021 of August 1 to 2021 to November 1. The chosen data will be used to satisfy the hypothesis, from the Closing Price of the Bitcoin and the Market Capitalization on the said day, daily for 3 months. The duration of the data to be gathered will be from the year 2021. Exchange rates of Php to USD will be collected from a website called BSP.

3.3. Econometric Tool and Model

Multiple linear regression will be used as the econometric model to forecast the result of the variables in this analysis, and Ordinary Least Squares will be used as the econometric method to explain the relationship of the dependent variable to the independent variables.

According to the Department of Statistics and Data Sciences of Yale University (n.d.), multiple linear regression attempts to model the relationship between two or more explanatory variables and a response variable by fitting a linear equation to observable results. Each independent variable x value corresponds to a value of the dependent variable y.

$$P^B = \beta_0 + \beta_1 ExR_{ph} + \beta_2 MC_B + \beta_3 TV_B + \varepsilon_t$$

Wherein:

P^B	Price of Bitcoin
ExR_{ph}	Exchange Rates (USD to PHP)
MC^B	Bitcoin's Market Capitalization
D^B	Bitcoin's Trade Volume
ε_t	Error term

IV. RESULT AND DISCUSSION

This paper examined the determinants of Bitcoin Prices. This research uses the daily observations of Bitcoin prices as the dependent variables, and Bitcoin Market Capitalization, Bitcoin Trade Volume, and Exchange Rates of Peso to Dollar as the independent variables from 1 August 2021 to 1 November 2021, with a total 93 observations. These data were gathered from Coindesk, Coingecko, and the Central Bank of the Philippines (BSP).

The Econometric model for this research paper is hereby presented as:

$$P_B = \beta_0 + \beta_1 EXR_{ph} + \beta_2 MC_B + \beta_3 TV_B + \varepsilon_t$$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9437.271	28533.49	0.330744	0.7416
BTC_MARKET_CAPITALIZAT	5.04E-08	1.60E-09	31.44207	0.0000
BTC_TRADE_VOLUME	0.016780	0.028941	0.579818	0.5635
EXCHANGE_RATES	-147.0650	581.0960	-0.253082	0.8008

R-squared	0.938698	Mean dependent var	49592.73
Adjusted R-squared	0.936632	S.D. dependent var	6885.966
S.E. of regression	1733.411	Akaike info criterion	17.79563
Sum squared resid	2.67E+08	Schwarz criterion	17.90456
Log likelihood	-823.4967	Hannan-Quinn criter.	17.83961
F-statistic	454.2753	Durbin-Watson stat	1.962470
Prob(F-statistic)	0.000000		

Table 1. Multiple Linear Regression

In Table 1, the model considering market capitalization, trade volume, and exchange rates is significant in explaining bitcoin price since its overall F-value is 454.28 with p-value, which is clearly less than. It can explain 93.87% of the variation in bitcoin price. The results also show that Durbin-Watson (DW) Statistic shows 1.96, which is near to 2.0, that explains that there is a positive correlation between the dependent and independent variables. In the same table, both for BTC Trade Volume and Exchange Rates, we failed to reject the null hypothesis due the p-value 0.5634 and 0.8008 respectively, being greater than alpha 0.05, and we accepted the alternative hypothesis for market capitalization for the p-value of less than 0.

In the three variables in the model, only market capitalization was significant with p-value being approximately equal to 0. It shows that for every $100,000,000 increase in bitcoin market capitalization, a $5.04 dollar increase in bitcoin price can be expected. While that for other insignificant values, for every $100,000,000 increase in bitcoin trade volume, a $1,678,000 dollar increase in bitcoin price can be expected. For every Php 10 peso increase of exchange rate, a $1,370.65 dollar decrease in bitcoin price.

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	8.14E+08	25199.37	NA
BTC_MARKET_CAPI	2.57E-18	71.44047	1.391725
BTC_TRADE_VOLU	0.000838	7.341190	1.004752
EXCHANGE_RATES	337672.5	26520.49	1.396087

Table 2 Multicollinearity

The (centered) variance inflation column found in table 2 table does not show any sign of multicollinearity with 1.3961 as the highest value, which is below the threshold value of 10. This just shows that all the dependent and independent variables are highly correlated with each other

TEST	*STATISTIC*	*P-VALUE*
DOORNIK-HANSEN	4.5951	.100505
SHAPIRO-WILK W	0.982547	0.25022
LILLIEFORS TEST	0.0469748	0.88
JARQUE-BERA	4.20884	0.121917

Table 3 Normality Test

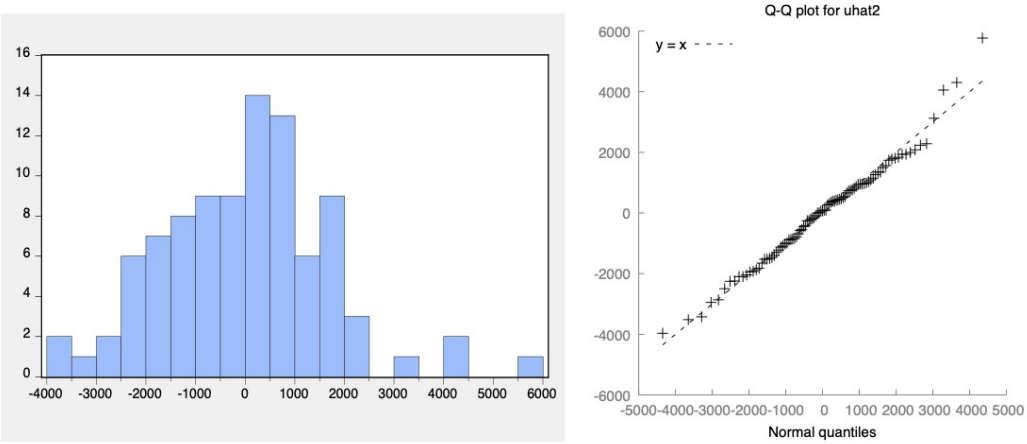

Figure 2 Normality Test: Frequency Distribution & Q-Q Plot

In table 3, the normality assumption is not rejected after performing the normality test of Doornik-hansen, Shapiro-wilk W, Lilliefors Test, and Jarque-Bera Test for Normality wherein a p-value of .100505, 0.25022, 0.88, and 0.12 respectively was obtained, all p-value was greater than alpha. As shown in figure 2 in the Q-Q Plot, points fall closely to the diagonal line forming a line that is roughly straight, concluding that there is a normal distribution between the variables.

TEST	*P-VALUE*
WHITE TEST	0.4805
BREUSH-PAGAN	0.1278

Table 4 Heteroskedasticity Test

In verifying the assumption of homoscedasticity, White's Test and Breusch-Pagan Test were used. Both tests resulted in a p-value greater than 0.05 level of significance, indicating that the error terms of the model have constant variances.

The researchers explored the effect of incorporating quadratic terms and cross-product regressors derived from the original set of variables in the model. None of these terms were found to be significant as shown in the results of the White's Test and the Breusch-Pagan test.

Analysis of Bitcoin Price, and Exchange Rates, BTC Market Capitalization, & BTC Trade Volume

Bitcoin has been one of the most popular cryptocurrencies up to this day. This cryptocurrency has a lot of potential but begs the question on how its prices are being affected by external factors, or determinants. Before the researchers conducted its test, one of the crucial parts in possibly knowing the objectives was choosing the right timeline for its observations. The timeline that was chosen was from August 1 to November 1 of 2021. The reason behind it is that the said timeline shows the most activity in the BTC market wherein volatilities were seen with an upward increase of the BTC price as well, as seen in Figure 3 below.

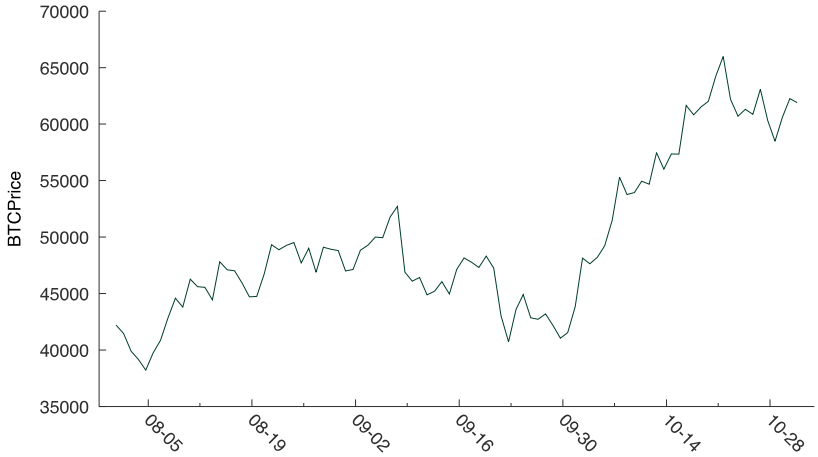

Figure 3 BTC Price: Time Series

After all the diagnostics, it was shown that all variables are significantly related. All the tests that were made all checks out. As shown in table 1, although the although only the BTC Market Capitalization only showed being significant with a p-value less than α =0.05 does not mean that the BTC Volume and Exchange Rates are insignificant. All three independent variables are shown to be highly significant because its overall F-value is 454.28 with p-value ≈0.00. This means that all variables are very much significant and does affect the price of bitcoin. Having said that, can prove that it can be determinants of the BTC Price. With the BTC Market Capitalization having a significance relationship the Bitcoin Price, this also concludes and proved the study of Klabbers (2017), that the rise in the market capitalization of bitcoin corresponds to an increase in media coverage and an increase in interest in economic literature. This proves that the market capitalization is a determinant of the price of bitcoin. One reason why the independent variables became insignificant is that observations are low and daily observations were used. Adjusted r-squared is also known to be relatively high, which means all data points fall within the line of the regression equations, can also be seen in the Q-Q Plot found in Figure 1.

V. CONCLUSION

The paper analyzes the factors influencing the Bitcoin price. namely the Exchange Rate, Market Capitalization, and the Trade Volume. Due to the increase in demand, this aims to answer whether Bitcoin is an ideal platform for investing considering its volatility in price by analyzing the trend of Bitcoin price. The secondary data is used and gathered from coidesk.com from 2021 of August 1st until November 1st. The tools used in analyzing the relationship of variables is doing the Multiple Linear Regression using the Ordinary Least Squares. This paper uses the 5% level of significance in analyzing the hypothesis. In comparison to Trade Volume and Exchange Rate, Market Capitalization has statistically shown an insignificance in the results, accepting that null hypothesis that it does not affect the bitcoin price, but in addition to that, all three independent variables are shown to be highly significant because its overall F-value is 454.28 with p-value ≈ 0.00. Furthermore, as Market Capitalization increases, Bitcoin price increases as well, thus making it a contributing factor in explaining the Bitcoin price. Despite having two insignificant independent variables, the result in the R-squared proves that 93.87% of the variation such as Market Capitalization, Trade Volume, and Exchange Rate can explain the Bitcoin price.

BTC price is strongly dependent with the independent variables such as the BTC Trade Volume, BTC Market Capitalization, and Exchange Rates, but these independent variables are very much volatile. It shows that bitcoin prices are highly volatile prices. One could expect an all-time high price (ATH) or an all-time low price (ATL) depending on the external factors that affect the whole crypto market. In this, we stand that bitcoin is not a viable investment because of its unknown and sudden reasons of volatility. Investing entails purchasing an asset that generates products, services, or money over a lengthy period. Bitcoin can be high-high risk with a high-high return or high-high risk with a high-high loss. A person can invest in it if it can accept the risks but is not suggested. But looking at a brighter side of the world of cryptocurrency, specifically Bitcoin, it shows a lot of potential on how future investments will take place. The world is slowly changing and adapting to change, especially to the new inventions, like cryptocurrency, a digital currency. More and more research should be dealt with this new digital currency to have more understanding and know what really affects its prices.

For recommendations for future researchers, the study has several limitations. One of the limitations was that there were only three quantitative factors that were studied about. In this, other determinants should be investigated. Another is that observations were limited with only 93 total observations. It is recommended that future research use bigger quantifiable observations and its factors and look for other possible factors that affect or determine the price of bitcoin. As for the recommendation for investors and future investors, the researchers suggest doing the "Do your own research" or DYOR before getting into these highly volatile investments because money is at risk and loss at this market cannot be undone.

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